

**For each question, you need to find the answer and show your work. For each problem, one point is for the correct answer. All other possible points are for showing or explaining your work. For some problems, you may just need to write out how you know you have the correct answer.**

1. A diagonal through a quadrilateral creates two right triangles. Which types of quadrilaterals could this be? (3 points)

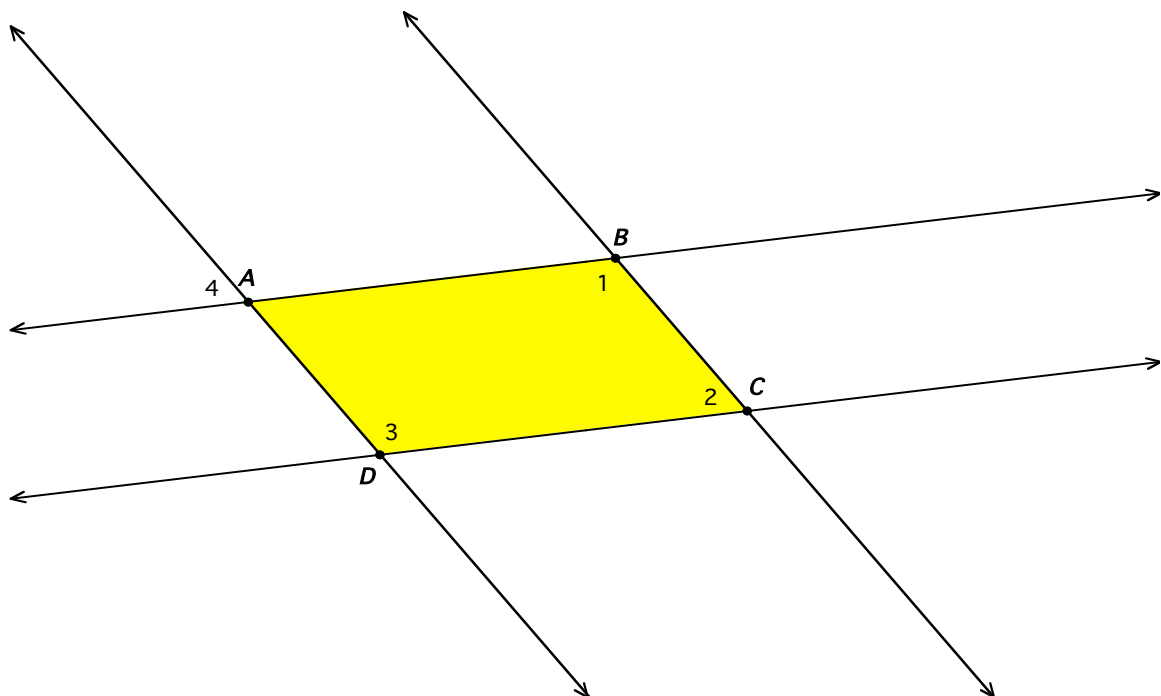
2. State three facts that are true about the diagonals of a rhombus. (3 points)

---

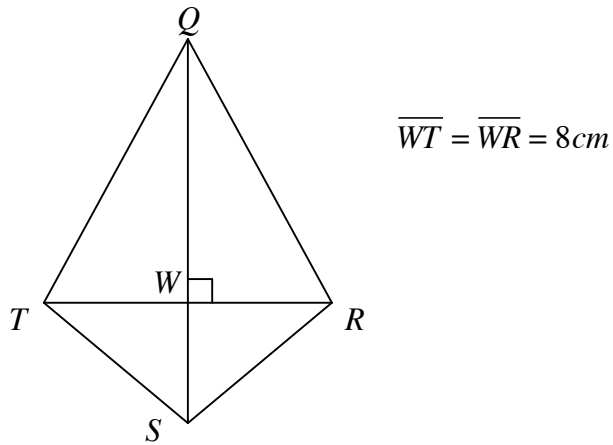
---

---

3. For quadrilateral  $ABCD$ , use a protractor to find the measure of all numbered angles. (4 points)

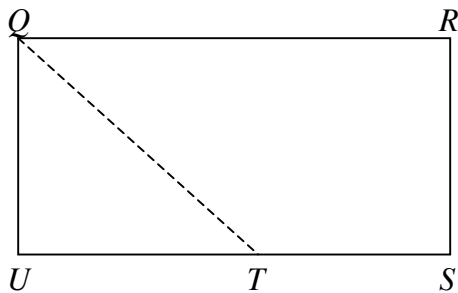


**\*\*Use quadrilateral  $QRST$  to answer numbers 4 and 5.\*\***

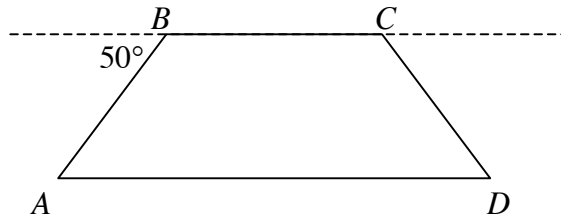


4. Describe the relationship between  $\overline{QS}$  and  $\overline{TR}$ . (3 points)
  
5. List three segments that could be altitudes, and state which triangles they are altitudes for. (6 points)

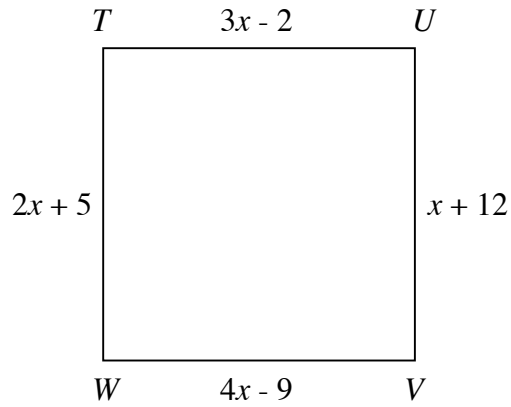
5. Figure  $QRSU$  is a rectangle. What is  $m\angle QTU$  when  $m\angle TQR = 42^\circ$ ? (3 points)



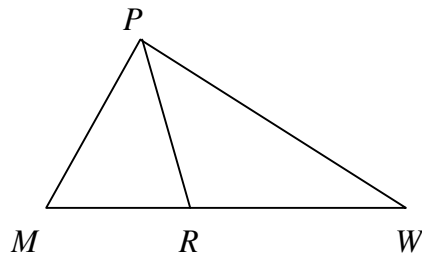
6. In isosceles trapezoid  $ABCD$ ,  $\overline{AB} \cong \overline{CD}$  and  $m\angle A \cong m\angle D$ . What is the measure of interior angle  $D$ ? (4 points)



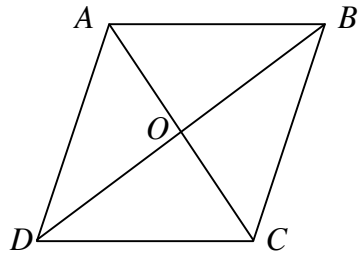
7. Figure  $TUVW$  is a square. What is the length of each side? (6 points)



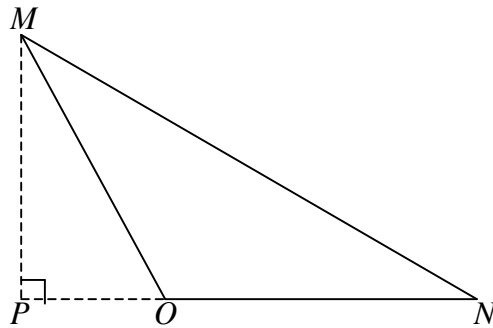
8. In  $\triangle MPW$ ,  $m\angle MPW = 76^\circ$ ,  $m\angle MPR = (3x + 2)^\circ$ , and  $m\angle RPW = (4x - 10)^\circ$ . What can be said of  $\overline{PR}$ ? (6 points)



9. Figure  $ABCD$  is a rhombus in which  $m\angle ABC = 76^\circ$ . Find  $m\angle ABO$ ,  $m\angle BAD$ , and  $m\angle OCD$ . (6 points)

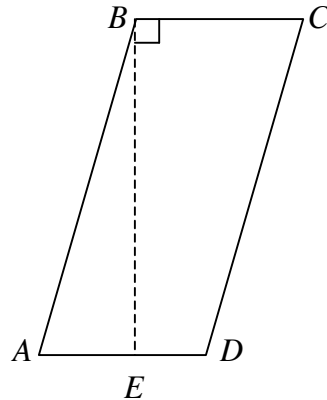


10. For  $\triangle MNO$ ,  $\overline{MP}$  is an altitude. The  $m\angle PMO = 42^\circ$ . What is  $m\angle MON$ ? (4 points)



**Open-Ended Question:** You may answer this question on this sheet of paper or on another sheet of paper. Make sure as you answer the open-ended question that you show your work AND explain how you know you are doing the correct work. YOU MUST EXPLAIN WHAT YOU ARE DOING!!!

The piece of lumber below is in the shape of a parallelogram.



$$m\angle BCD = 72^\circ$$

- A. If the straight cut marked by the dashed line is made, how many degrees will be in  $\angle ABE$ ?
- B. When the cut is made in the piece of lumber, what will be the shape of figure  $BCDE$ ? Explain how you know your answer is correct.